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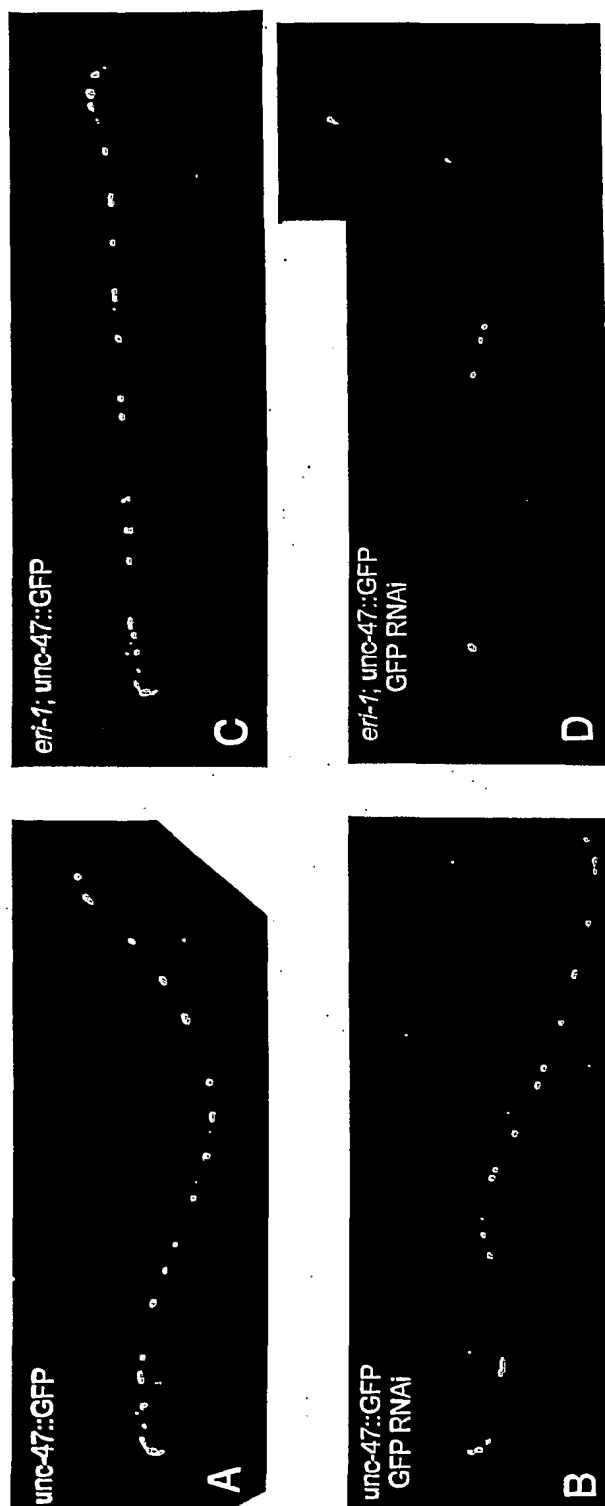


Fig. 2

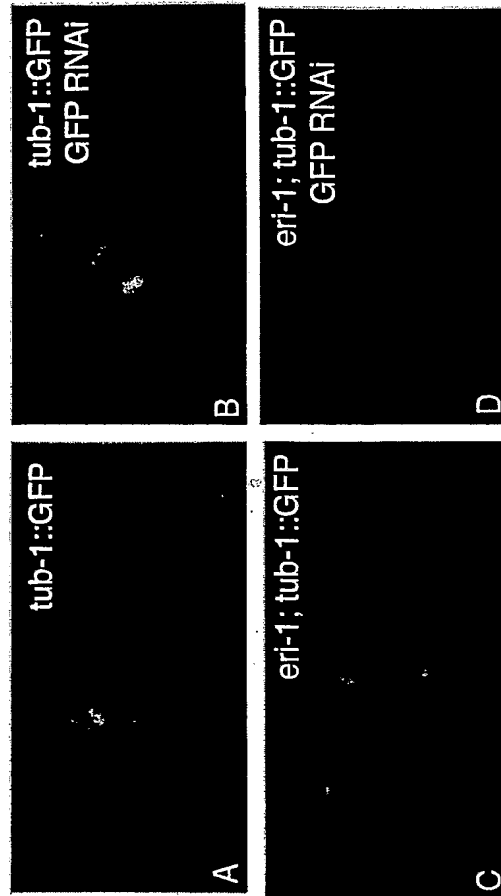


Fig. 3A

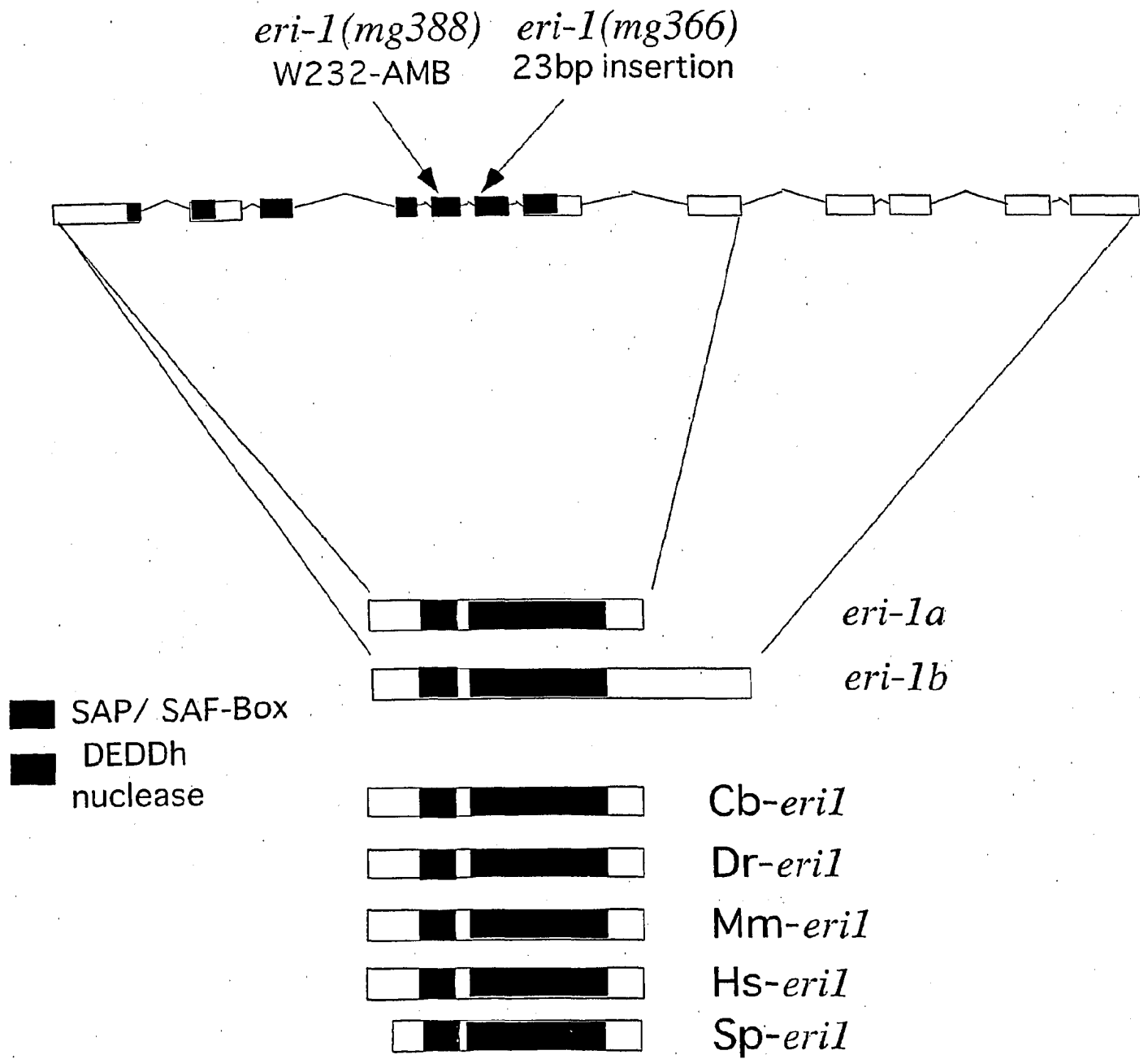


Fig. 3B

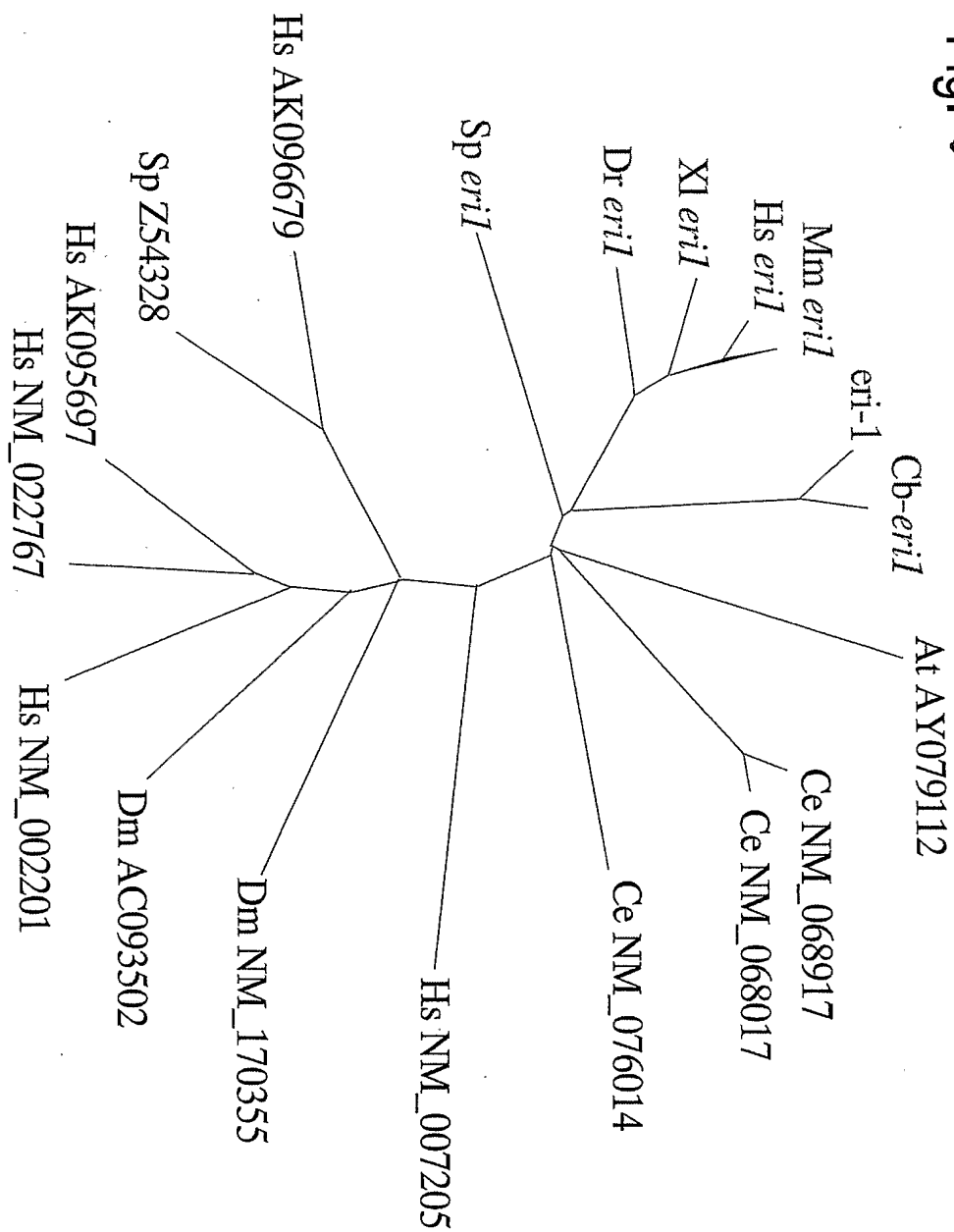


Fig 3c

	I	II	III
<i>eri-1</i>	YLIAI	FVITD	GNKSG
Cb <i>eri1</i>	~NFQAI	FVITD	GNKSG
HS <i>eri1</i> (3 <sup>hExo</sup> )	YICII	LITDGS	GRPCGL
Mm <i>eri1</i>	YICII	ILTDGS	GRPCGL
X1 <i>eri1</i>	YICVI	ILTDGS	GRPCGL
Dr <i>eri1</i>	YICV	FLTDGS	GRPCGL
Sp <i>eri1</i>	YLLIV	WACDGP	GSEGR
AAH051864	KCVAI	VVGALH	QHGSS

Fig. 4

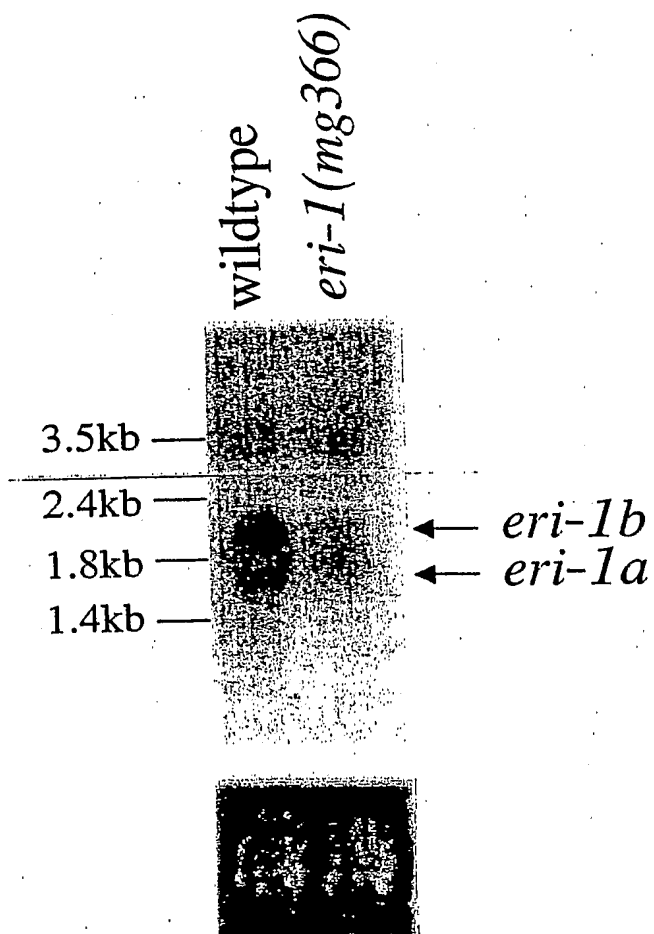
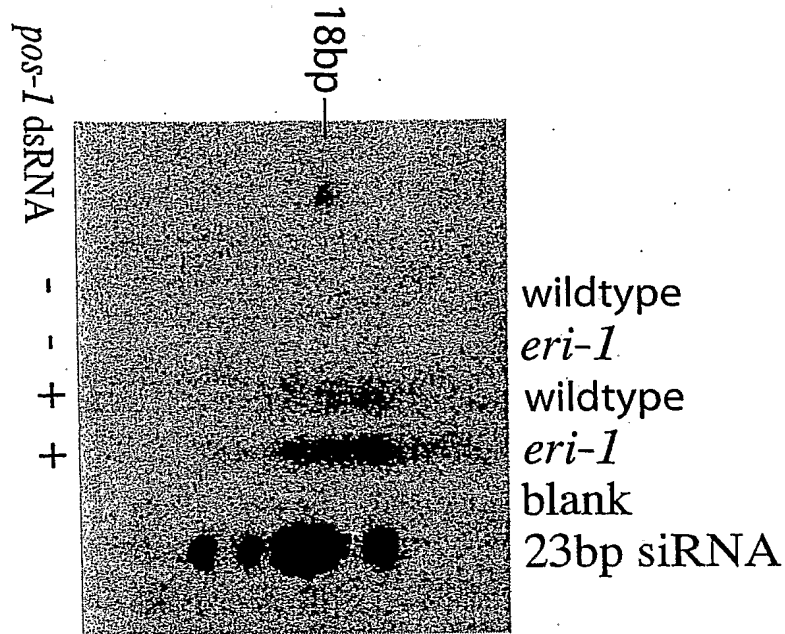


Fig. 5

A



B

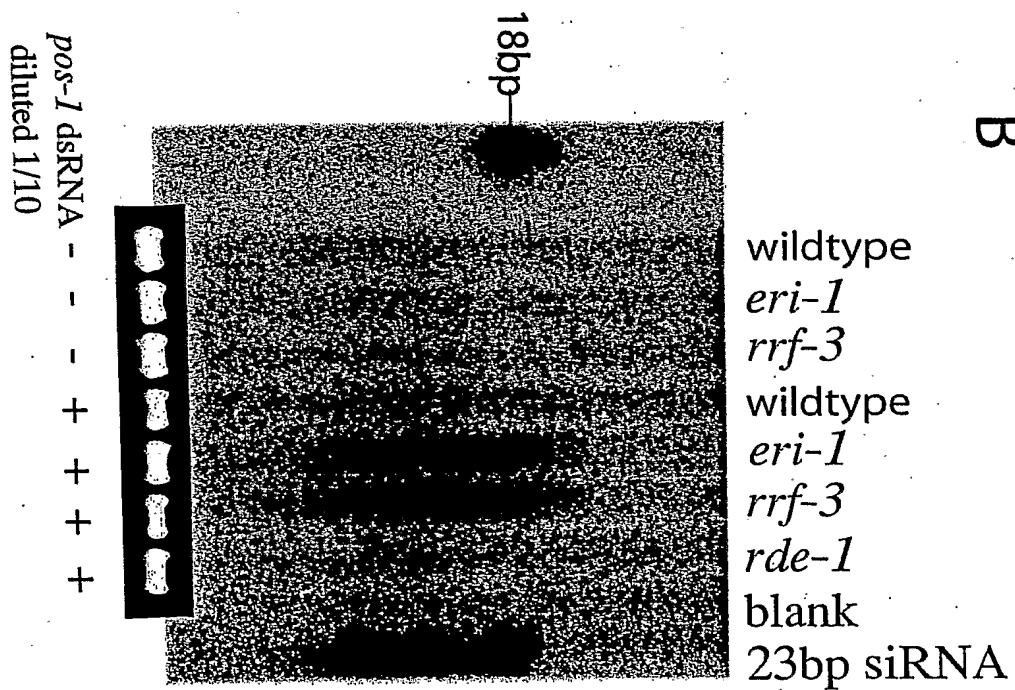


Fig. 6

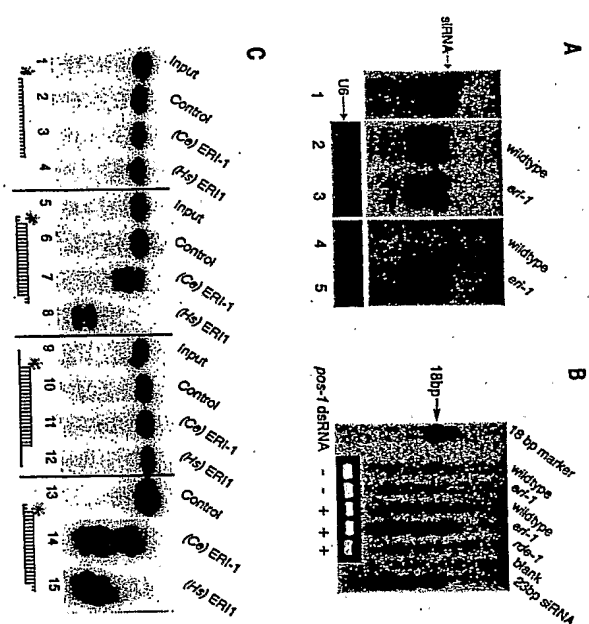




Fig. 7

Wildtype

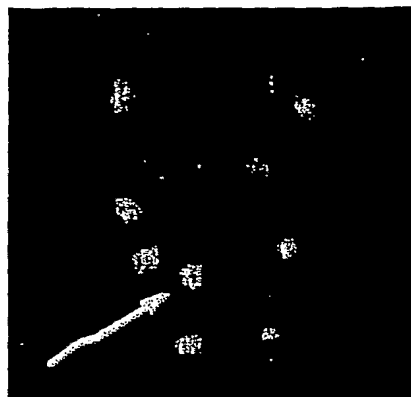
*eri-1(mg366)*

Fig 8a

Head  
→  
Neurons

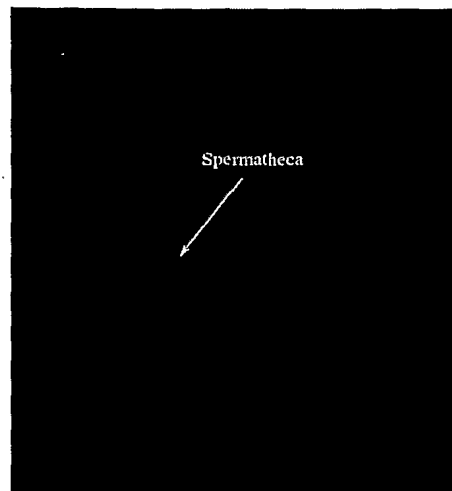
Developing  
Gonad

Tail  
→  
Neurons

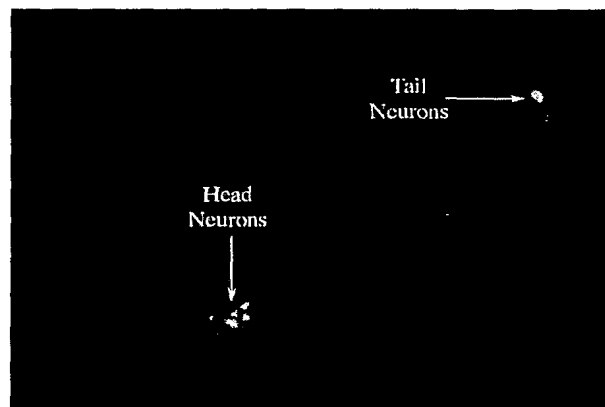
*eri-1b::GFP*  
cytoplasmic  
localization

Fig. 8

B



C



**Figure 9A**

Gene="T07A9.5b(SEQ ID NO:1)

join (1..335,553..673,728..829,1361..1433,1477..1600,  
1666..1801,1850..2047,2614..2781,3122..3231,3288..3396, 3767..3857,3994..4175)

Gene="T07A9.5a

join(1..335,553..673,728..829,1361..1433,1477..1600,1666..1801,1850..2047,2614..2781)

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61	ctgaaaatca	gccagaatt	cgatgcaagt	aacgcaaac	agaatgacga	accagaaaaa
121	acagcagttg	aagtggaaatc	ggctgaaacc	agaaccgacg	aatctgaaaa	atcaatcgat
181	attccacgtg	aacagcaact	tttaccctcc	gaacgtgttg	agcctttaa	atcaatgggtg
241	gaaccagaat	acgtgaaaaa	agtgataagg	caaatggata	caatgactgc	tgaacagcta
301	aaacaagcgt	tgatgaagat	taaagtgtcc	acagggtaaa	attatgctaa	attcattcaa
361	acttcttatt	ttcctaacag	aacccaattt	cgtacattta	agatatagct	ttgcttcatt
421	tttgatagtt	ttgttaaaaa	gaaacagcat	tttttgaaatc	attttgcggt	aaatatagtc
481	atccgtaaaa	gaaataatgt	aattttctta	ctaaaaatttc	gaaattaact	taaattataa
541	ctctaatttc	agcggaaaaca	agaaaactct	tcgaaaacgg	gttgacacaa	attatcgaaa
601	ggaaaatgca	ttattgaatc	gaaaaatgga	gccgaatgcc	gataaaaactg	cacgcttttt
661	tgactattta	attgtatgat	tttcagaatt	tctggaaaag	aaatacttta	gttattaatt
721	atttcaggca	attgatttcg	agtgtacgtg	cgtcgagatt	atatacgatt	accacacga
781	aatcatcgaa	ttaccggcag	ttttgatcga	cgttcgggaa	atgaaaattg	taggattttt
841	tcattcttga	aaatggaata	tgtcgaatta	cgcattgctg	gtactccccg	cggacaaggga
901	ttgaacagtt	ctcagttgaa	attcttgatt	ttggattttt	cctctggggg	ttcggctoga
961	atttttattt	tttttttcgt	gttttccgc	aagaaaatca	ttttttccgg	gaaaagggtga
1021	caaacgtttc	gtcatcctat	cgaaatctgg	aatataaaaa	tgtattcaac	aaaaaacgtt
1081	tcaaatataa	catttttcgt	cttttttggg	tttcttattt	agctataaaa	tttgtttcgc
1141	ttgtgaagaa	aatattggaa	aaaaatagaa	aaatccttct	ccccattttt	aatttaaggc
1201	agatggaagt	tctttgggtg	attatcaagt	tataaaaaact	gactaaaactg	aaagcttttt
1261	ttgttttgg	ttgttttatt	atttttaggaa	tataaataaa	aaacgaaaaa	tatataactt
1321	tataatatcc	atcgtcaaaa	taagcatatt	taatttccag	atcagcgagt	ttcgaaacct
1381	tgtccgacct	gtcagaaaatc	cgaagctcag	cgaattttgt	atgcagttta	ccagtaagac
1441	actaatgtca	tttttaaaat	gtaaacctcg	ttgtagaaat	tgcccaagaa	acagtcgatg
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1561	tcggacagaa	aaattccaga	ttcgcatttg	ttactgatgg	gtaaggaatc	gaagacgatt
1621	ttttgttcac	taaaacttca	aagttgtgca	taacgaacta	ttcagacctc	acgatattgt
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1741	ttttatcaac	atcaaaaaaga	cattcaaaga	gaaattcaat	ggacttatca	agggaaatgg
1801	agtaagtttt	taaggttcaa	attttaatta	aaacctcaat	tctcttcaga	aatccggaat
1861	tgaaaacatg	ttagaacgtc	tggatctgtc	gtttgttggg	aataaacata	gtggatttga
1921	tgatgcaacg	aatattgcag	cgattgcgat	tcaaatgatg	aagttgaaaa	ttgagttgag
1981	aattaatcag	aaatgctcgt	ataaggagaa	tcaacggagt	gctgcgcgaa	aggatgaaga
2041	gcgagagggt	cgaaacagac	tacgtcgttt	tcacccgatg	ggttgactct	cccattccgt
2101	ctcgggtgtc	aacaagtgat	tcctgttttt	gaaaaaagct	cttccctcaa	cccttaaaat
2161	ttcgatatga	aattgtttca	gtgcattttt	cactaatttg	gagacctgtt	gaattgctct
2221	aaatgttttt	ttgcaaagtt	caatgttttt	cagaacggtt	ataagtaggt	gaacactctg
2281	ggagattttt	ggactttttt	ttgtgttgaa	aatctgaaca	tttttggatc	aagtggagtg
2341	aagaaacttt	cagatttttt	tcaaaaaatt	acaaattttt	gaaaaatctc	ccagagtgtt
2401	caoctacttc	taaacgttct	gaaaaaacat	taaagtttga	aaaaaacgca	tttgagcaa
2461	ttctacaggc	ctccaaagta	gtgaaaacag	gcactgaaac	aattccagat	cgaaatgaag
2521	tctgacgata	aaatggaaac	ctttccttct	tgtaggaaa	attaggaaat	agttcatcac
2581	aaattttcaat	taaaaagtta	ttaaattttt	cagttagaag	acgctgcaaa	cgtggatctt
2641	acatcagtcg	atatctctcg	tctgtatttt	caacttttga	tgcgtcgttt	accactgaaa
2701	ctgtcctctg	tgacacgacg	agagttcata	aatgaagagt	atttgagattg	tgattcatgt
2761	gatgatttga	ctgatgataa	ggtgaaacat	ctacattctt	gtgatattta	tgaatttttc
2821	gatgaaaaaa	cttcagctag	ttttacagat	tcaaagtgtt	tgatttgcta	ggcgaatttt
2881	ggcaaaagta	tacttattga	tgtaaacatt	ttccctatca	attttgtgtc	ttagccaacg
2941	aattttccaaa	ttttattttca	aaagtaaaat	tccatgtcaa	atttttacatt	tttagtttaa
3001	aaattatggt	tcttccaagc	ccacattttt	cattgaaact	ggtatagttg	tatttgattc
3061	gccccgaata	aataaatttc	tgtttccatg	ttttatacac	acaaaaactc	aaaattttca
3121	gaacgacgag	gcggcatttc	aggaaaaaat	ggcaattcga	gagtatattg	agaataaaca
3181	gacggaagat	ttcgcgaaaa	ttgctgctga	gcgggggaatt	tttaaaattg	ggtaatggac
3241	tttggttgga	attttgaaca	aaaaaatcta	gtttctggcg	ttttcagtg	aataaaatca
3301	tatcaaactg	caagaccgat	aatagaggat	gatgacgtgg	atggtgaaag	tgaagaggaa
3361	gattatggaa	ctgaatttga	aatgttggaa	gttgtggtga	gaatgttgag	aaaaaacact

**Figure 9A (cont'd)**

```
3421 tcaaaaatat caattttggt tttaaaaatc aacgccacga ttogatgaat cgaaattóaa
3481 aaattctccg aaaaagcgga aaactctgct ttgaaatca gaaatttgca atgttttccg
3541 ggataatcga aaatttcttt caaaaaaaaaa ttaatgtagg tataaatttc agattcatcg
3601 tgggtgtggat tttaaaaatc cgcgagagaa aaaaattctg aataactaag cttttcgatt
3661 ttcgtataat acaaaaccga acttttattt tgttttcaaa ttttaataaa attcgagcaa
3721 aaaaccaaat cgatttggag ttttaataat taattttttc gttcaggaaa gaatgcctcc
3781 agttagttct acgttacaca ctgaagtcga tttagatgct gtatgggaac gagatggtgg
3841 aagtgattct gaaagaggta cgtcgaggga attgcaatat ggaaattgca ttagaaaaag
3901 cttgaaattc tgtttgatta aaatgtcaat tcaattgctc ccaaagttta aattattgaa
3961 tagcacttaa aaaacataat tgtgaaaatt cagaaaacct ctcaaagtct ccaagtctcc
4021 acgagtttcc atcgtcatcc acatcatcac cacatgccac gtcagaacat gtgacgtcat
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4141 cgttggcatc gtcttcaaat cgatctagtt tctag
```

**Figure 9B**T07A9.5b Encoded Protein (SEQ ID NO:2)

MSADEPSPEDEKYLESLRDLLKISQEFDASNAKQNDPEKTAVE  
VESAETRDESEKSIDIPREQQLLPSEVEPLKSMVEPEYVKKVIRQMDTMTAEQLKQ  
ALMKIKVSTGGNKKT LRKRV AQYYRKENALLNRKMEPNADKTARFFDYLIAIDFECTC  
VEIIYDYPHEIIELPAVLIDVREMKIISEFRTYVRPVRNPKLSEFCMQFTKIAQETVD  
AAPYFREALQRLYTWMRKFN LGQKNSRFAFVTDGPHDMWKFMQFQCLLSNIRMPHMF  
SFINIKKTFKEKFNGLIKNGKSGIENMLERLDLSFVG NKHSGLDDATNIAAIAIQMM  
KLKIELRINQKCSYKENQRSAARKDEERELEDAANVDLTSDISRRDFQLWMRRLPLK  
LSSVTRREFINEEYLD CSDDLTDDKNDEAAFQEKMAIREYLENKQTEDFAKIAAER  
GIFKIG EIKSYQTARPIIEDDDVDVSEEEEDYGTEFEMLEVVERMPVVSSTLHTEVDL  
DAVWERDGGSDSERENLSNAPSLHEFPSSSTSSPHATSEHVTSSSPLHIDDDVDRVLN  
APPKNSLASSSNRSSF

T07A9.5a (SEQ ID NO:3)

MSADEPSPEDEKYLESLRDLLKISQEFDASNAKQNDPEKTAVE  
VESAETRDESEKSIDIPREQQLLPSEVEPLKSMVEPEYVKKVIRQMDTMTAEQLKQ  
ALMKIKVSTGGNKKT LRKRV AQYYRKENALLNRKMEPNADKTARFFDYLIAIDFECTC  
VEIIYDYPHEIIELPAVLIDVREMKIISEFRTYVRPVRNPKLSEFCMQFTKIAQETVD  
AAPYFREALQRLYTWMRKFN LGQKNSRFAFVTDGPHDMWKFMQFQCLLSNIRMPHMF  
SFINIKKTFKEKFNGLIKNGKSGIENMLERLDLSFVG NKHSGLDDATNIAAIAIQMM  
KLKIELRINQKCSYKENQRSAARKDEERELEDAANVDLTSDISRRDFQLWMRRLPLK  
LSSVTRREFINEEYLD CSDDLTDDKV KHLHSCDIYEI FDEKTSASFTDSKCLIC

**Figure 10A**

Gene: 3'HEXO (SEQ ID NO:4)

```

1  cccgccgccgc  gggaaocgcga  gcccggtaat  ttttcaacgg  agaaaggcga  ggcttttcggg
61  ctctgcagag  tgagagttag  caagtgtccg  gctccagcaa  ctctcctctg  gcgtgacagc
121  cggcatggag  gatccacaga  gtaaagagcc  tgccggcgag  gccgtggctc  tcgcgctgct
181  ggagtcgccg  cggccggagg  gcggggagga  gccgccgcgt  cccagtcccc  aggaaactca
241  acagtgtaaa  tttgatggcc  aggagacaaa  aggatccaag  ttcattacct  ccagtgcgag
301  tgactttcagt  gacccggttt  acaaagagat  tgccattacg  aatggctgta  ttaatagaat
361  gagtaaggaa  gaactcagag  ctaagctttc  agaattcaag  cttgaaacta  gaggagtaaa
421  ggatgttcta  aagaagagac  tgaaaaacta  ttataagaag  cagaagctga  tgctgaaaga
481  gagcaatttt  gctgacagtt  attatgacta  catttgtatt  attgactttg  aagccacttg
541  tgaagaagga  aacccacctg  agtttgtaca  tgaaataatt  gaatttcggg  ttgttttact
601  gaatacgcat  actttagaaa  tagaagacac  gtttcagcag  tatgtaagac  cagagattaa
661  cacacagctg  tctgatttct  gcacagctct  aactggaatt  actcaggatc  aggtagacag
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781  aggaacaaaag  tataaatact  cacttttaac  agatggttct  tgggatatga  gtaagtctct
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1141  tccaccacca  caaatgccac  attttagaaa  gtaacaacag  ttttgtgtgt  ggatcattcc
1201  aattgaagtt  gctatgaaga  ggtagcagat  gaatctcatt  gaattagtcc  tgtagtgcac
1261  actttaagca  ccttaaaaca  tttaaaatct  tattacaggt  gatagagata  gatacatgta
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1561  catatcttaa  aatgcagaaa  tgattggaag  gtagatctta  tctagccttt  ggatttcaag
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1741  gaattatgat  ggattatagg  gtttggttaa  aaatccagtt  actgaaggaa  ttaatgaaaa
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1861  aaatcactgg  ggtctttttg  gatttggttg  tttgattcgc  cttccttttt  tgacatatgt
1921  atgccttaat  tcttaaatct  gagggaccat  gctttgaaat  agactgaaaa  ttaagggcca
1981  ccacctaat  ttactttgta  ttcagtatcg  taagtgaggt  taataaagtc  aatactttct
2041  accatatatt  acgtttttgt  tattaaaaaa  cttcattggc  cactagtga  gttagtcaat
2101  aaaagacttg  tttttctgaa  aaaaaaaaaa  aaaaaaaaaa  aaaaaaaaaa  aaaaaaaaaa
2161  aaaaaaaaaa  aaaaaaaaaa  aaaaaaaaaa  aaaaaa

```

**Figure 10B**

Homo sapiens 3' exoribonuclease (SEQ ID NO:5)

MEDPQSKEPAGEAVALALLESPPREGGEEPPRPSPEETQQCKFD  
GQETKGSKFITSSASDFSDPVYKEIATNGCINRMSKEELRAKLSEFKLETRGVKDVL  
KKRLKNYYKKQKLMLKESNFADSYDYICIIDFEATCEEGNPPEFVHEIIEFPVLLN  
THTLEIEDTFQQYVRPEINTQLSDFCISLTGITQDQVDRADTFPQVLKKVIDWMKLKE  
LGTKYKYSLLTDGSWDMKFLNIQCQLSRLKYPPFAKKWINIRKSYGNFYKVPRSQTK  
LTIMLEKLGMDYDGRPHCGLDDSKNIARIAVRMLQDGCELRINEKMHAGQLMSVSSSL  
PIEGTPPPQMPHFRK



## Figure 10C ERI-1 Nuclease Domains

*C. elegans* ERI-1

YLIAIDFECTCVEIIYDYPHEIIELPVAVLIDVREMKIISEFRTYVRPVRNPKLSEFCMQF  
 TKIAQETVDAAPYFREALQRLYTWMRKFNLGQKNSRFVFDGPHDMWKFMQFQCLLSNI  
 RMPHMFRRSFINKKTFKEKFNGLIKNGKSGIENMLERLDLSFVGNKHSGLDDATNIAAI  
 AIQMMKLKIE

## Human ERI-1

YICIIDFEATCEEENPPEFVHEIIEFPVVLNTHHTLEIEDTFQQYVRPEINTQLSDFCIS  
 LTGITQDQVDRADTFPQVLKKVIDWMKLKELGTYKYSLTLDGSDMSKFLNIQCQLSRL  
 KYPPFAKKWINIRKSYGNFYKVPRSQTKLTIMLEKLGMDYDGRPHCGLDDSKNIARIAVR  
 MLQDGCE

*Zea mays* ERI-1

YFVVIDFEATCDKVNPPFPQEIIIEFPSVLVNSATGKLEECFQTYVRPTYHQFLTDFCKEL  
 TGIQQIQVDRGVPLGEALLMHDKWLEDKGIKNTNFAIVTWSNWD CRIMLESECRFKRIRK  
 PPYFNRWINLRVPFQEVYGDVRCNLKEAVQLAGLTWEGRAHCGLDDARNTARLLALLMHR  
 GFK

*Oryza* ERI-1

HFVVVDFEATCERGRRIYPQEIIIEFPAVLVDAATGRLVSAFRAYVRPRHHPRLTDFCREL  
 TGIAQGDVDAGVGLAEALLRHDEWLRAAGVVEGGGRFAVVTWGDADCRMTLEQECCRFGKI  
 AKPAYFDRWVLDLRVHFEAAFGGGGQVRVQLQEAVRAAGLEWVGRHLCGLDDACNTARLLVE  
 LLRRGVP

*Arabidopsis* ERI-1

FLVIDLEGKVEIIEFPILIVDAKTMEVVLDLHFRFVRPTKMSEQAINKYIEGKYGELGVDR  
 VWHDTAIPFKQVVEEFVWLAEHDLDKDTDWGLNDAAFVTCGNWDIKTKIPEQCVVSN  
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 LSEGA

# ERI-1A exhibits sequence specific nuclease activity

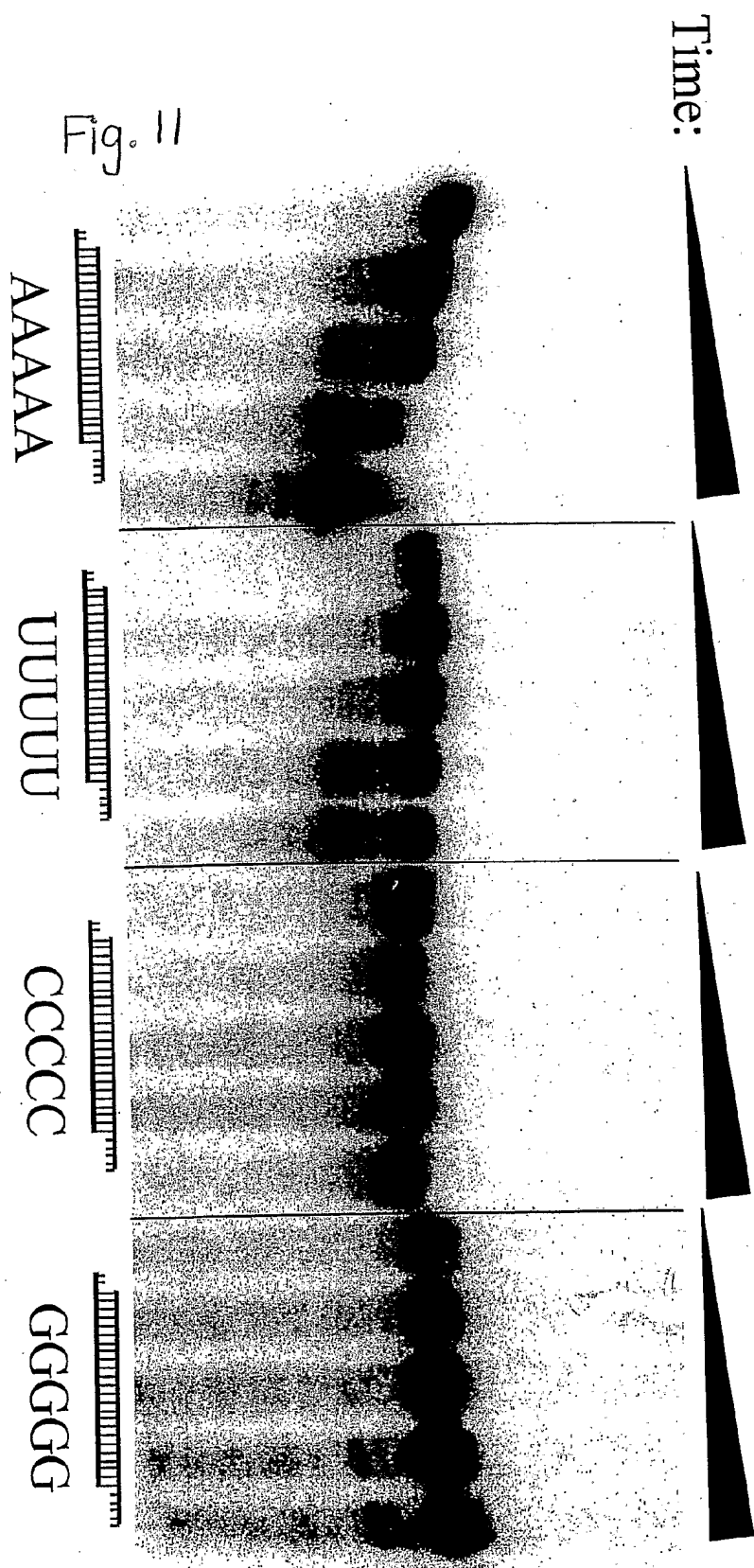
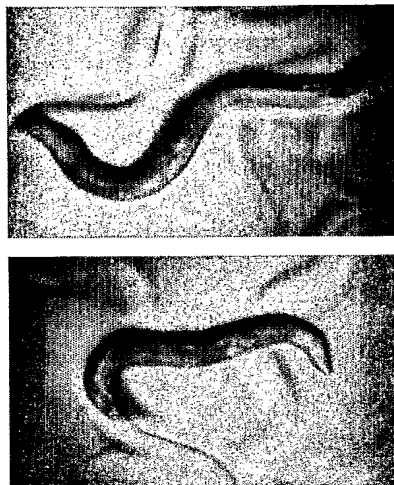


Fig. 12

Wild type

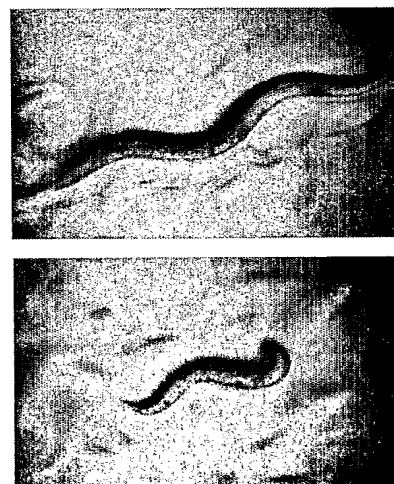
A

control *dpy-13* RNAi



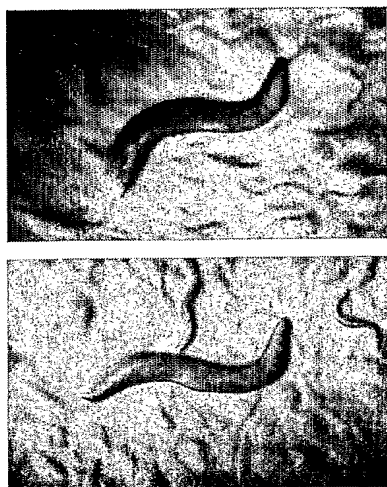
B

control *dpy-13* RNAi



*dpy-13* (*e458*)

control *dpy-13* RNAi



*eri-1* (*mg366*); *dpy-13* (*e458*)

D

control *dpy-13* RNAi

